WS-7038U
Wireless 433 MHz
Miniature Rain Monitor

Instruction Manual
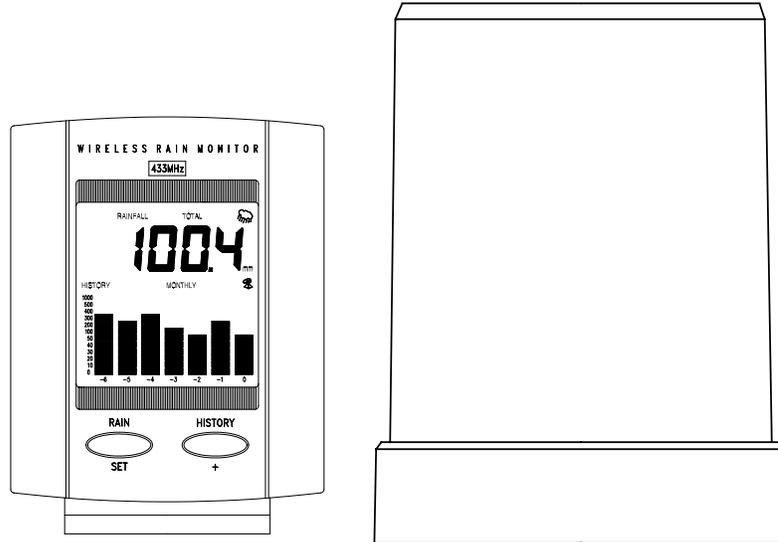
LA CROSSE
TECHNOLOGY

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INVENTORY OF CONTENTS

1) WS-7038U—Wireless Rain Monitor with table stand. (Figure 1).
2) TX5U—Wireless Rainfall Transmitter: includes a base, rainfall collector, and two mounting screws. (Figure 2).
3) Instruction manual and warranty card.

Figure 1

Figure 2

Function Buttons
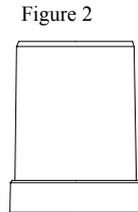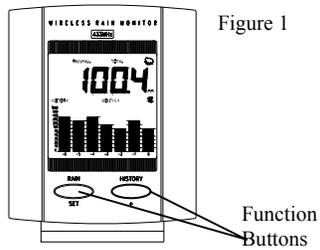
ADDITIONAL EQUIPMENT (not included)

1) Two fresh 1.5V AAA batteries.
2) Two fresh 1.5V AA batteries.
3) Flathead screwdriver.

QUICK SET-UP GUIDE

1) Insert two AA batteries into the Rainfall Transmitter.
2) Insert two AAA batteries into the Rain Monitor.
3) Program settings.
4) Wait 15 minutes, or until the Rain Monitor has received signals from the Rainfall Transmitter.
5) Mount the units, ensuring they are sending and receiving signals.

DETAILED SET-UP GUIDE

I) BATTERY INSTALLATION

__Note:__ Batteries will fit tightly. To avoid start-up problems make sure that the batteries do not spring free.

Battery compartment   Battery cover

A) RAINFALL TRANSMITTER
1. Remove the flat-head screw and battery cover, located on the underside of the base.
2. Observe the correct polarity, and install two AA batteries.
3. Make sure the rubber weather seal is in place and replace the battery cover and screw.
4. Separate the base by turning the rainfall collector in a counter-clockwise direction. Remove the tape from the teeter-totter. Replace the cover.

Teeter-Totter
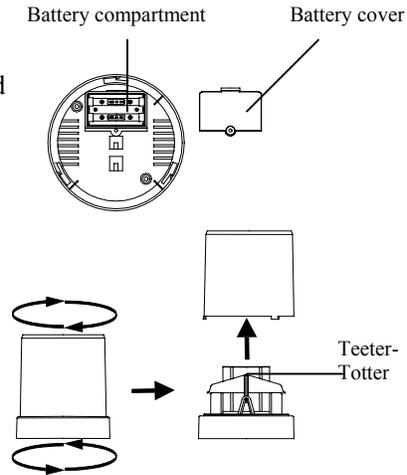
B. RAIN MONITOR

1. Remove the battery cover on the backside of the unit.
2. Observe the correct polarity, and install 2 AAA batteries.
3. Replace the battery cover.

__Note:__ After the batteries have been installed, the entire LCD (Liquid Crystal Display) will light up briefly, then the default settings will be initiated.

Battery Compartment

Battery Cover
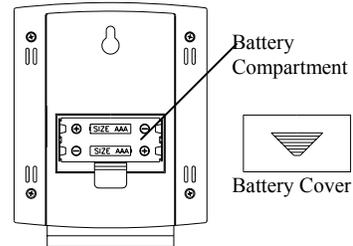
PROGRAM MODE

After the batteries have been installed the minute digits of the time display will flash, signaling that the program mode has been automatically entered. If no buttons are pressed, the digits will stop flashing after 50 seconds. To enter the programming mode (when not automatically entered) hold down the *RAIN/SET* button for 2 seconds—the minute digits will flash. The Program Mode is laid out in a manner that allows you to program each function separately, or you can follow the instructions entirely to program the Rain Monitor. Complete programming is usually done for the initial set-up, and will require you to skip step 1 of programming sections II through VI.

I) FUNCTION BUTTONS

There are 2 function buttons located on the front of the Rain Monitor, and under the LCD screen. The function buttons are labeled: *RAIN/SET*, and *HISTORY/+*. See Figure 1.

II) TIME SETTING

1) Hold down the *RAIN/SET button* for 2 seconds, or until the minute-digits flash.
2) Press the *HISTORY/+ button* to adjust the minutes.
3) Press the *RAIN/SET button* to confirm the minutes and to shift to set the hour.
4) The hour-digits should now be flashing. Press the *HISTORY/+ button* to adjust the hour.

   Note: *An "A" (a.m.) or a "P" (p.m.) will appear to the right of the time display, set the time accordingly.*

5) Press the *RAIN/SET button* to confirm the hour setting, and to advance to set the date.

III) DATE SETTING

1) Hold down the *RAIN/SET button* for 2 seconds, press the *RAIN/SET button* 2 more times—until the first digit of the date (the month) flashes (default is "1.1").
2) Press the *HISTORY/+ button* to adjust the month.
3) Press the *RAIN/SET button* to confirm the month, and to shift to set the date.
4) Press the *HISTORY/+ button* to adjust the date.
5) Press the *RAIN/SET button* to confirm the date, and to advance to set the weekday.

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IV) WEEKDAY SETTING

Note: *The weekday is not represented alphabetically, it is represented numerically, with "1" equal to Monday, and "2" equal to Tuesday, etc.*

1) Hold down the *RAIN/SET button* for 2 seconds, press the *RAIN/SET button* 4 more times—until the weekday digit flashes (default is "1").
2) Press the *HISTORY/+ button* to adjust the weekday.
3) Press the *RAIN/SET button* to confirm the weekday digit, and to advance to set the Rain Alarm.

V) RAIN ALARM SETTING

Note: *When the Rain Alarm is activated, the alarm will sound when rain is detected. The alarm will sound for approximately 150 seconds before automatically turning off. The alarm can also be turned off manually by pressing any button. If there is a break of no rain between two rain periods, the break must exceed 80 minutes for the alarm to sound.*

1) Hold down the *RAIN/SET button* for 2-seconds, press the *RAIN/SET button* 5 more times—until the default "ALOFF" flashes.
2) Press the *HISTORY/+ button* to adjust the alarm setting—"ALOFF" or "AL ON".
3) Press the *RAIN/SET button* to confirm the alarm setting, and to advance to Resetting the Total Rain Amount.

VI) RESETTING THE TOTAL RAIN AMOUNT

1) Hold down the *RAIN/SET button* for 2-seconds, press the *RAIN/SET button* 6 more times—until the numerical digits flash under the "TOTAL" heading.
2) Press the *HISTORY/+ button* to reset the total rain amount.
3) Press the *RAIN/SET button* to confirm, and to exit the program mode.

   Note: *The total rain amount will constantly accumulate unless the Rain Monitor is reset, or the batteries are changed.*

FEATURES & OPERATIONS

I)   BAR GRAPH

The bar graph displays the rainfall history. As indicated by the appearance of the word "HISTORY" at the left-central area of the LCD screen.

The horizontal axis measures the past time periods, with "0" representing the current day, week, or month and "6" representing the oldest information (6 days ago, 6 weeks ago, or 6 months ago). The graph reads from right to left.

The vertical axis measures the rainfall in inches. The normal (default) measurement scale is {0, 0.1, 0.2, 0.3, 0.4, 0.5, 1, 2, 3, 4, 5, 10 inches}. If, within any selected time period (1 day, 1 week, 1 month), rainfall exceeds 20 inches the measurement scale automatically changes to {0, 1, 2, 3, 4, 5, 10, 20, 30, 40, 50, 100 inches}.

The bar graph will display the rainfall history either by day, week, or month. To select which to display:

1.   Press the *HISTORY/+ button*. The "DAILY" icon will shift and become the "WEEKLY" icon (appearing across the central position of the LCD).
2.   Press the *HISTORY/+ button* to toggle through the "WEEKLY," "MONTHLY," and "DAILY" icons.

If "DAILY" is selected, the graph will display the rainfall history for the past 6 days. The information that is displayed in column "0" (the right column) is renewed daily at midnight, and the information contained in the columns is shifted to the left. If "WEEKLY" is selected, the graph will display the rainfall history for the past 6 weeks. The information that is displayed in column "0" is renewed every Monday at midnight, and the information contained in the columns is shifted to the left. If "MONTHLY" is selected, the graph will display the rainfall history for the past 6 months. The information displayed in column "0" is renewed on the first day of every month, at midnight. The information contained in the columns is shifted to the left.

II) NUMERICAL REPRESENTATION OF THE BAR GRAPH

The bar graph displays the columns sequentially from "0" to "6" until all columns are showing. Then they are hidden again, and the sequential display is repeated. It is possible to read each column one at a time, simultaneously displaying the numeric measurement for that column above the bar graph. For example, the weekly rainfall total from 3 weeks ago may be viewed. Also, the numeric data from each column will correspond to the preveouly selected history ("DAILY," "WEEKLY," or "MONTHLY"). To view individual totals from the last six periods:

1. Hold down the *HISTORY/+ button* for 2 seconds. The numeric data from column "0" should appear at the top of the LCD screen, with the "RAINFALL" icon displayed above the data.
2. Press the *HISTORY/+ button* again, column "1" will be highlighted, and the numeric data will be displayed above the bar graph.
3. Continue to press the *HISTORY/+ button* until the data from each column (0 through 6) has been displayed.
4. Pressing the *HISTORY/+ button* once more, after viewing the data from column 6, will exit this mode—returning to normal operation.

III) MANUAL RESET OF THE RAIN MULTIPLICATOR

<u>Note:</u> The rain multiplicator is the amount of rain needed to tip the teeter-totter bucket (inside the rain gauge). The multiplicator is preset to a value of "105" (0.0105 inches per tip); this number produces the most accurate rainfall measurement. There is no need to manually set this number unless it has been changed.

1. Remove the batteries and wait 30 seconds. This will reset the 1-hour rainfall total, but the bar graph and other totals will remain.
2. Checking the polarity, install batteries.
3. During the brief 2 seconds that the LCD screen lights up, hold down the *HISTORY/+ button*, until "105" appears in the LCD (the "5" will be flashing).
4. If the multiplicator is not 105; use the *HISTORY/+ button* to to change the last digit to a 5. Press the *RAIN/SET button* to confirm and shift to the middle digit.
5. Press the *HISTORY/+ button* to change the middle digit, and press the *RAIN/SET button* to confirm and shift to the first digit. Repeat process for the first digit.
6. Press the *RAIN/SET button* to exit the Rain Multiplicator mode, and to enter the normal mode. Follow Program Mode for set-up proceedures.

IV) COMPLETE RESETTING OF PRECIPITATION DATA

Note: *The rain data held by the bar chart and other rain totals (excluding the 1-hour total) will be stored and displayed again, even after the batteries have been removed. Therefore it is necessary to apply the following instructions to reset the bar chart and other totals, if desired.*

1) Enter the Rain Multiplicator mode as instructed in steps 1 through 3 of the *Manual Reset of the Rain Multiplicator* section above.
2) After setting the rain multiplicator, while the left digit is flashing, press the *RAIN/SET* button for 8 seconds. This will clear data, and reset it to 0.

V) RECEPTION REQUIRMENTS

The Rain Monitor receives data from the Rainfall Transmitter every 5 minutes, while the Rainfall Transmitter transmits data every 1 minute. Data is transmitted immediately after rain has been detected. If 3 transmission attempts are made and no data is received, "---" will be displayed in the LCD. If this is the case, reset the Rain Monitor.

A) RESETTING

1) Remove batteries from the Rain Monitor and Rain Gauge.
2) Wait 30 seconds, or start-up and transmission problems may arise, then reinstall the batteries.
3) Follow Programming instruction.

The Rain Monitor cannot receive data in the Programming Mode, nor during the numeric display of the bar chart. Reception is also interupted when a button is pressed, and will continue when the button is released.
The transmission range is approximately 80 feet (25m) in open space. The surrounding environment and interference levels influence this transmission range.

VI) ICONS

A) FLASHING RAIN CLOUD

A flashing rain cloud appears in the upper right hand corner of the LCD screen, when the Rainfall Transmitter is accumulating rain and transmitting data.

B) SATELLITE ICON

The satellite icon appears above the right column of the bar graph, when the Rain Monitor is searching for a signal from the Rainfall Transmitter.

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MOUNTING

Note: *Before permanently mounting, ensure that the Rain Monitor is able to receive signals from the Rainfall Transmitter at their desired location. Obstacles such as walls, concrete, and large metal objects can reduce the range. Place units in their desired location, and wait approximately 15 minutes before permanently mounting to ensure that there is proper reception*

I) THE TX5U—RAINFALL TRANSMITTER

The Rainfall Transmitter can be mounted in two ways:

- simply placing it in a desired location, or
- mounting it to a surface with the provided screws.

Ensure that the Rainfall Transmitter is completely horizontal and stable.

1) Rotate the rainfall collector separating it from the base.
2) There are two cylindrical holes in the base to guide the mounting screws. Place the base over a desired mounting surface. With a pencil, mark the mounting surface through the cylindrical holes.

3) Where marked, start the screws.
4) Place the base over mounting surface. Install screws through the cylindrical holes and into the started holes on the mounting surface.
5) Secure the screws, ensuring that no part of the base can lift off the mounting surface.
6) Remove the manufacture tape from the teeter-totter on the base. If this is not done there will be no way to measure rainfall, and no measurement will display on the Weather Center.
7) Place the rainfall collector onto the base. Place the 3 tabs (on the rainfall collector) into the tab slots (on the base) and turn counter-clockwise.
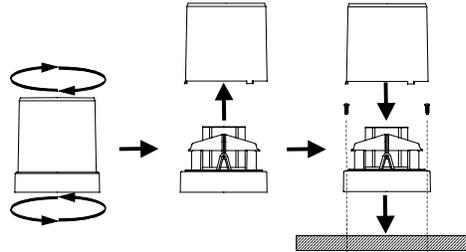
II) THE WIRELESS RAIN MONITOR

The Rain Monitor can also be mounted in two ways:
- with the table stand or,
- on the wall with the use of a wall hanging screw (not included).

A) USING THE TABLE-STAND

1. The Rain Monitor comes with the table stand already mounted. If you wish to use the table-stand all that is required is to place the Rain Monitor in an appropriate location.

B) WALL MOUNTING

Figure 3

1. Remove the table stand. To do this, pull down on the stand from the rear and rotate forward. (Figure 3).
2. Fix a screw (not included) into the desired wall, leaving approximately 3/16 of an inch (5mm) extended from the wall. (Figure 4).
3. Place the Rain Monitor onto the screw using the hanging hole on the backside. Gently pull the Rain Monitor down to lock the screw into place.

Figure 4
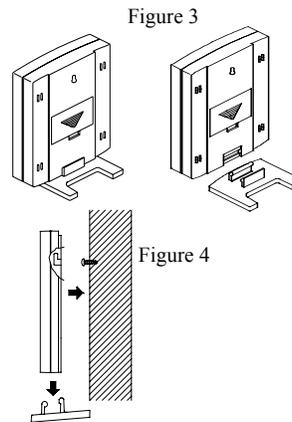
MAINTENANCE & CARE

- Extreme temperatures, vibrations, and shock should be avoided to prevent damage to the units.
- Clean displays and units with a soft, damp cloth. Do not use solvents or scouring agents—they may mark and damage the displays and casings.
- Do not submerge in water.
- Immediately remove all low powered batteries to avoid leakage and damage. Replace with new batteries only, and of recommended size.
- Opening the casings invalidates the warranty. Do not try to repair the units. Contact La Crosse Technology for Repairs.

TROUBLESHOOTING

Problem:	The LCD is faint.
Solution:	1) Replace batteries.
Problem:	"OFL" appears in LCD.
Solution:	1) Follow Reset directions. (Total rainfall accumulation has exceeded 999.99in.)
Problem:	"---" Appears in LCD (rain monitor has lost signal from gauge)
Solution:	1) Follow reset directions. 2) Distance the Rain Monitor or Rainfall Transmitter at least 6 feet (2m) away from interfering sources on a 433 MHz signal (computers, TV sets, headphones, speakers, etc.). 3) Move receiver away from metal window frames. 4) Neighbors using 433 MHz devices can interfere also.
Problem:	Need to reset the bar graph (EEPROM Rain Monitor memory)
Solution:	1) Remove batteries, and follow instructions in section III, under Features & Operations.
Problem:	Rainfall amount is not correct.
Solution:	1) Manually change the rain multiplicator number to 105, following instructions in section II, under Features & Operations.

__Note:__ For any questions not answered, contact La Crosse Technology with the contact information found at the end of this instructional manual.

SPECIFICATIONS

Recommended operating temperature:	
Rain Monitor:	32°F to 122°F (0°C to 50°C)
Rainfall Transmitter:	32°F to 122°F (0°C to 50°C)
Rainfall Totals:	For the previous 6 days, 6 weeks, 6 months, plus current day, week, or month
Data Check Intervals:	
Receiver checking interval:	Every 5 minutes
Rainfall Transmitter checking interval:	Every minute if no rain, immediately when rain begins
Transmission frequency:	433.92 MHz
Maximum transmission range:	80 feet (25m)
Power supplies (Alkaline battery recommended):	
Rain monitor:	2 x AAA, IEC LR3, 1.5V batteries
Rainfall Transmitter:	2 x AA, IEC LR6, 1.5V batteries
Dimensions (L x W x H):	
Rain monitor (without stand):	3.54 x 0.86 x 4.13in (90 x 22 x 105mm)
Rainfall Transmitter:	5.19in diameter x 7.20in high (132mm diameter x 183mm high)

WARRANTY INFORMATION

La Crosse Technology provides a 1-year warranty on this weather station. Contact La Crosse Technology immediately upon discovery of any defects covered by this warranty.

Before sending the Weather Station in for repairs, contact La Crosse Technology. The Weather Station will be repaired or replaced with the same or similar model.

This warranty does not cover any defects resulting from improper use, unauthorized repairs, faulty batteries, or the Weather Stations inability to receive a signal due to any source of interference.

LA CROSSE TECHNOLOGY WILL NOT ASSUME LIABILITY FOR INCIDENTAL, CONSEQUENTIAL, PUNITIVE, OR OTHER SIMILAR DAMAGES ASSOCIATED WITH THE OPERATION OR MALFUNCTION OF THIS WEATHER STATION. THIS PRODUCT IS NOT TO BE USED FOR MEDICAL PURPOSES OR FOR PUBLIC INFORMATION. THIS PRODUCT IS NOT A TOY. KEEP OUT OF CHILDRE'S REACH.

This warranty gives you specific legal rights. You may also have other rights specific to your State. Some States do no allow the exclusion of consequential or incidental damages therefore the above exclusion of limitation may not apply to you.

For warranty work, technical support, or information contact

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